

The Albuquerque International Balloon Fiesta

October 2-10, 2021

Weather Forecast Office
Albuquerque, NM
Issued September 28, 2021 9:45 PM MDT



October 2010 Photo courtesy bobvn via flickr



October 11, 2014 Photo courtesy Enrique A Sanabria via flickr



Photo courtesy Alyssa Clements



October 3, 2009 Photo courtesy Holly Ladd via flickr



Photo courtesy KrisNM via flickr



Photo courtesy Brian Guyer



October 2017 Photo courtesy Randall Hergert



The Albuquerque International Balloon Fiesta



October 2018 Photo courtesy Enrique A Sanabria via flickr



Photo courtesy Sharon Sullivan



Photo courtesy Brian Guyer



Photo courtesy Randall Hergert

October can be an ideal month for outdoor events. The thunderstorm season has waned and the jet stream is usually still situated to our north. However, on rare occasions, remnants of land-falling tropical systems from the eastern Pacific or western Gulf of Mexico can bring surges of moisture into the state, particularly early in the month. Also, weather systems moving far enough south through the Rocky Mountain region can and do bring strong winds, cooler than normal temperatures and widespread precipitation, including snow! Severe weather, while not common, can occur as it did in 2004.

Always check the latest NWS forecast for the [Albuquerque Metro Area](#) prior to attending an outdoor event.

A weather phenomenon known as the "Albuquerque Box" produces an atmospheric wind pattern that results in balloons remaining over the park during the morning hours. Read more about the Albuquerque Box below.

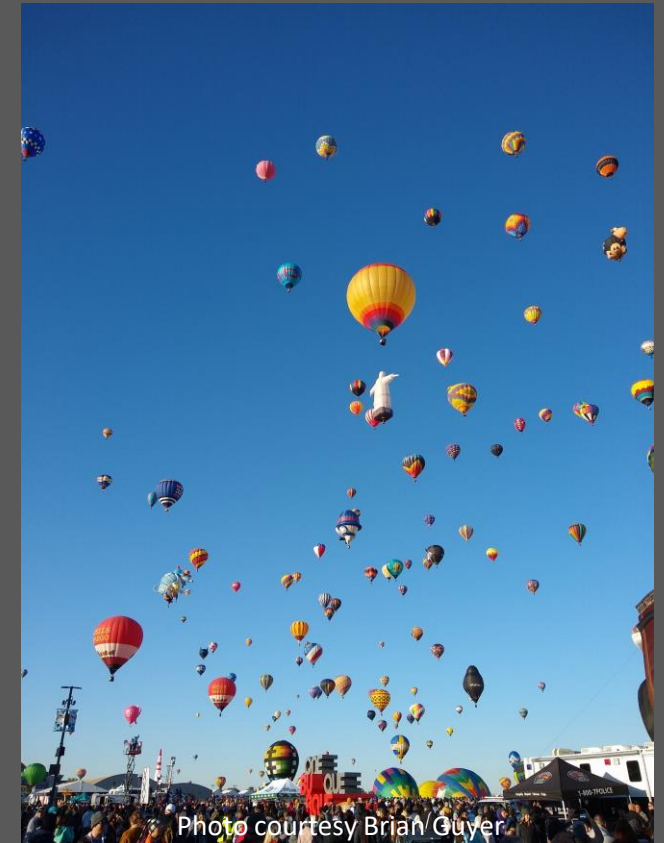


Weather Summary



The data listed on the following slides summarizes temperature, wind, and precipitation for the first fifteen days of October for the Albuquerque International Balloon Fiesta. Several notable weather events have also been highlighted that impacted the Albuquerque metro area. Data was compiled using the Albuquerque International Sunport. Data from the Sunport should be considered as a proxy to conditions observed at Balloon Fiesta Park since weather conditions can vary greatly across the metro area. Due to its valley location, morning low temperatures at Balloon Fiesta Park can often be 5 to 10° cooler than at the airport, while daytime maximum temperatures are generally 1 to 3° warmer. Wind can also vary considerably between the Sunport and the Balloon Fiesta Park since complex terrain features to the east of Albuquerque often result in microscale circulation patterns.

- Average low temperature: 49.4° (upper 30s to low 40s at Balloon Fiesta Park)
- Coldest low temperature: 30.0° in 1976
- Warmest low temperature: 66.0° in 2019
- Average high temperature: 74.8° (mid to upper 70s at Balloon Fiesta Park)
- Coldest high temperature: 38.0° in 1986
- Warmest high temperature: 91.0° in 1979
- Average number of days with precipitation (trace or more): 4 days
- Most number of days with precipitation (trace or more): 9 days (2005), 8 days (1974 and 2000), 7 days (1986, 2003, 2004, 2018)
- Snow, although rare, has been reported during the Balloon Fiesta. Measurable snow fell on October 12, 1986 (3.2") and on October 5, 2004 (0.2"). A trace of snow was reported in 1984, 1997, 1999, 2016, and 2018





Albuquerque Metro Area Historical Events



- **October 9, 2016:** A strong thunderstorm moved through Albuquerque during the late morning with heavy rain, lightning, and pea to dime size hail.
- **October 15, 2015:** A powerful canyon wind blasted into Albuquerque with peak wind gusts up to 68 mph below Tijeras Canyon. Tree limbs, power lines, road signs, and fences were blown down across the east side of Albuquerque.
- **October 12, 2014:** A virga shower passing through the Albuquerque metro area produced wind gusts up to 70 mph. A large road sign was blown down along I-25 and a large tree was damaged in the foothills.
- **October 10, 2013:** A weather system moving thru the southern Rockies produced wind gusts up to 60 mph at the ABQ Sunport.
- **October 10, 2010:** An isolated severe thunderstorm moved southeast across the Sandia Mountains and produced 1 to 2" diameter hail. Significant damage was reported to trees, gardens, vehicles, roofs, and skylights in the east mountains.
- **October 11, 2008:** A severe thunderstorm moved through the Albuquerque metro area with hail up to the size of quarters and wind gusts near 65 mph. Damage was reported from wind and hail. Very heavy rain resulted in flash flooding in Rio Rancho. Several dirt roads were washed out.
- **October 4-5, 2004:** Numerous severe thunderstorms moved across the Rio Grande Valley, including the Albuquerque metro area in the late evening of [October 4th](#) and again on [October 5th](#). Heavy rain and severe hail up to the size of golf balls produced significant damage across northwest Albuquerque and Rio Rancho. (Click each date to view radar loops)
- **October 12, 2000:** A severe thunderstorm moved through the west side of Albuquerque and Rio Rancho with hail up to the size of quarters.
- **October 1, 1998:** A strong thunderstorm produced pea to dime size hail over downtown Albuquerque.
- **October 10, 1998:** A strong thunderstorm moved through Rio Rancho with hail up to the size of pennies.
- **October 4, 1996:** A thunderstorm with heavy rain produced minor flooding along Central Ave on the west side of Albuquerque. An Air Force sergeant was sent to the hospital after being struck by lightning at Kirtland AFB.
- **October 7, 1978:** A severe thunderstorm moved through Albuquerque with peak wind gusts up to 62 mph.
- **October 6, 1977:** A severe thunderstorm moved through Albuquerque with peak wind gusts up to 58 mph.

The gap between 1978 and 1994 may not represent the complete weather history in the metro during the first two weeks of October.



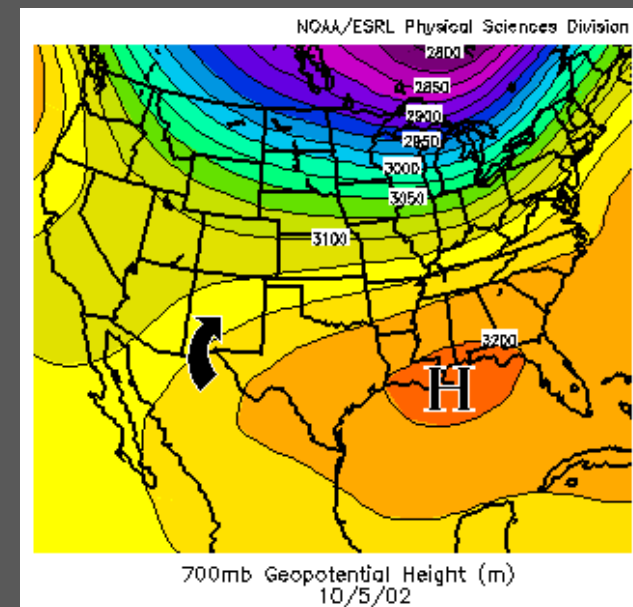
The Albuquerque Box



The Albuquerque box is essentially a valley wind pattern which develops under certain "stable" conditions. During the nighttime hours, the air near the ground is cooled by the process of radiational cooling. This process is most efficient with clear skies, low humidity, and light winds. Cooler, and therefore more dense air, flows downslope and pools at lower elevations, such as along arroyos and river valleys – as noted by the white arrows in the image on the top right. The cool air that pools in the Rio Grande Valley is shallow (generally no more than a few hundred feet in depth). During the early morning hours this "drainage wind" flows from north to south down the valley from higher to lower elevations (blue arrows). In much of the Albuquerque metro area, including the balloon park, a north wind of generally less than 10 mph can result.



Above the surface, the flow of the air is controlled by synoptic patterns in the atmosphere. The figure in the bottom right depicts the 700 millibar heights, or pressure pattern around 5,000 feet above the surface, on October 5th, 2002. High pressure over the southeast U.S. resulted in a weak southerly flow over central NM. The stable "river of air", or drainage wind described above, occurs below a temperature inversion which separates it from warmer, less dense air above the inversion, just as vinegar is separated from oil by differences in density. The wind direction in the airmass above the shallow inversion can be different than that below the inversion. In an "ideal" box pattern, the wind blows in exactly the opposite direction, with a north wind at the surface and a south wind above the surface (orange arrows). A skillful pilot can bring a balloon back to near the point of takeoff by changing altitudes to ride wind currents in different directions. Upon takeoff the pilot first heads south toward downtown, then ascends higher where the winds will take the balloon back north toward the balloon fiesta grounds.





The Albuquerque Box



The photo to the bottom right, taken during the 2007 Balloon Fiesta, nicely depicts the low level drainage winds. The photo was taken facing west, and the flags at the north end of Balloon Fiesta Park indicate a north to south wind. On this day, winds aloft were out of the south and southwest (as noted by the white flags on the red balloon). This wind pattern for which the Albuquerque area is well known occurs under stable conditions during the fall season when generally no strong weather systems are affecting the area. A local study found that on average the "box" circulation occurs about 3 days out of the first 15 days of October. Even on days when the "box" occurs, it dissipates by mid morning as the sun heats the ground, resulting in thermal turbulence which mixes the lower layers of air and eliminates the low level inversion. An example video of the "Albuquerque Box" is available by clicking the bottom left image.



An example video of the "Albuquerque Box" is available by clicking the above image



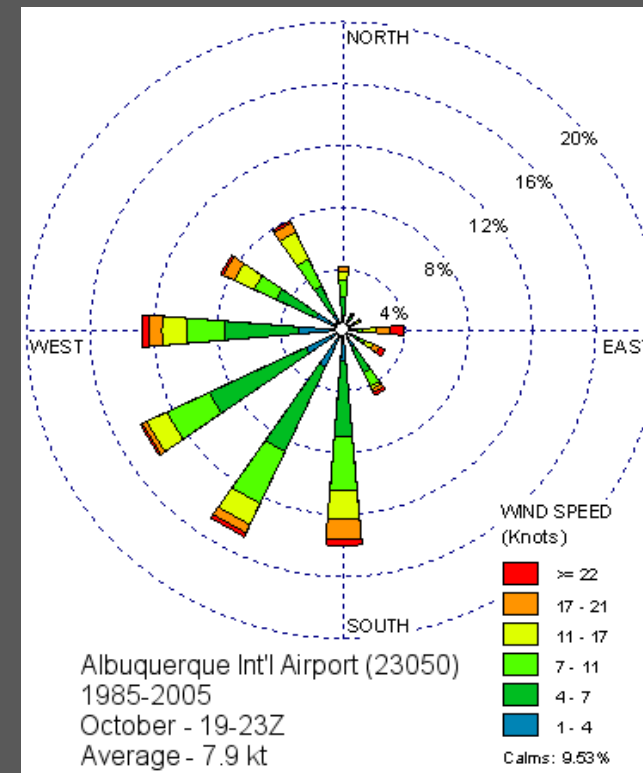
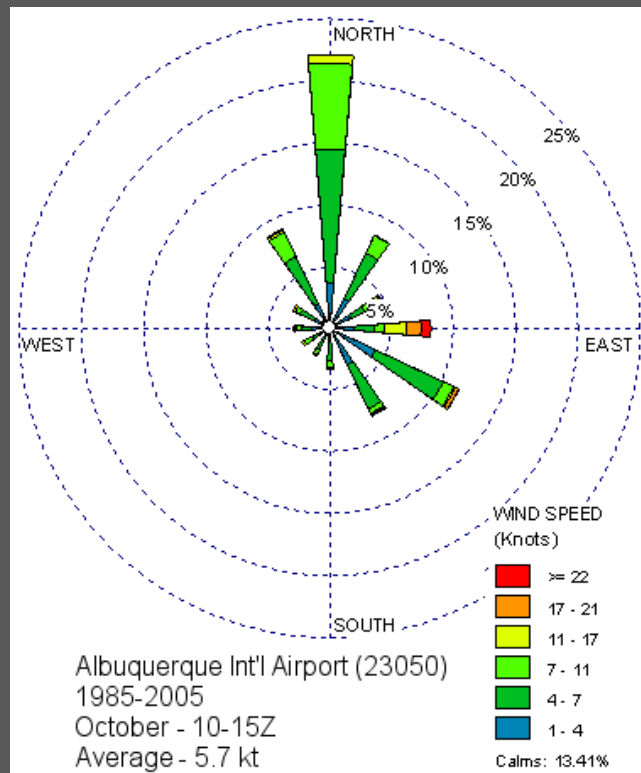
Photo courtesy J. Wachter



Wind Roses

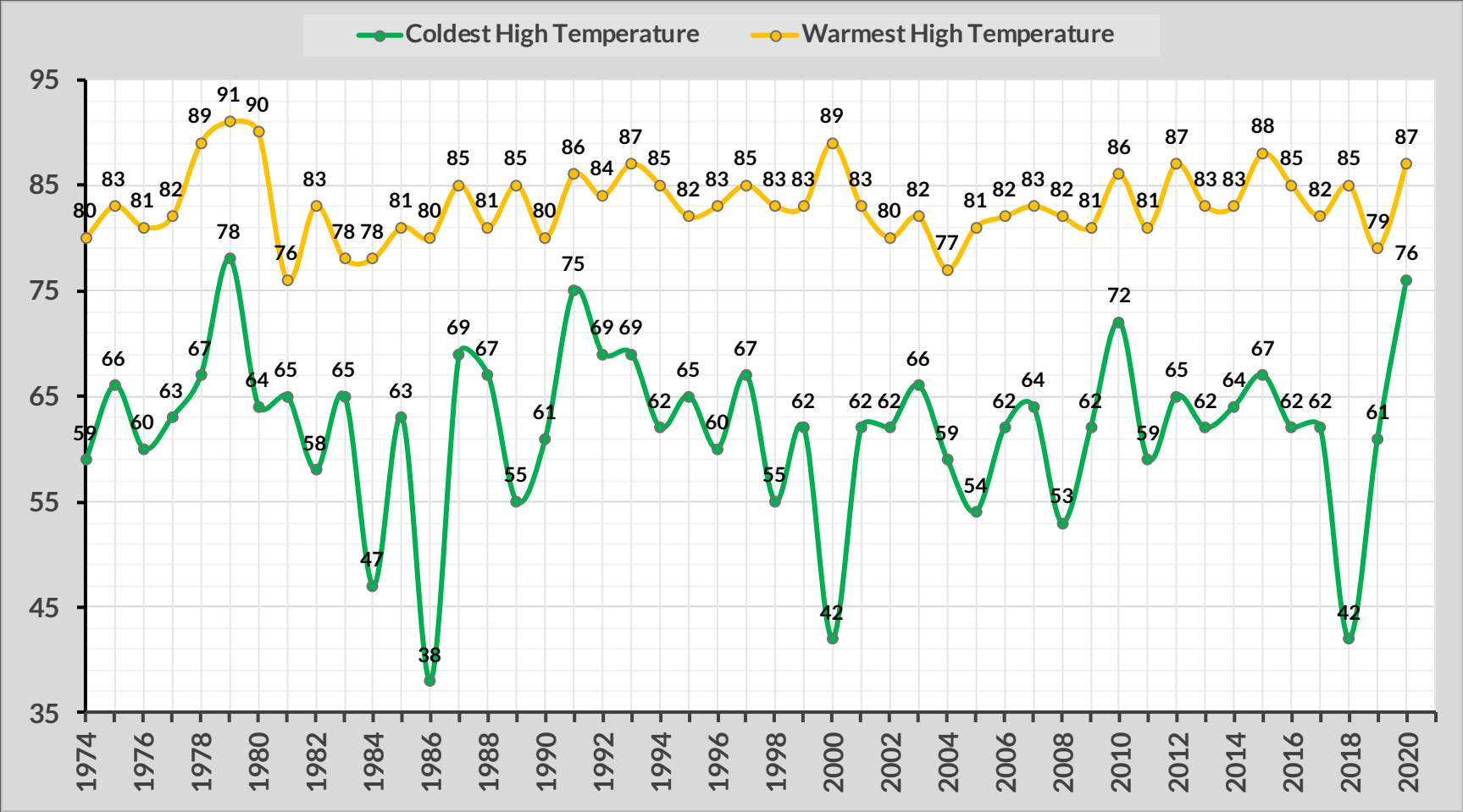


Wind roses can help illustrate the difference in wind patterns from morning to afternoon. The wind roses below depict the frequency and speed of the wind from 12 compass directions measured at the Albuquerque Sunport for the month of October from 1985 through 2005. The wind rose on the left depicts the distribution of the wind from 4 am to 9 am MDT. The persistence of the nocturnal drainage wind in the Rio Grande Valley is evident by the greater frequency of northerly surface winds. Cooler surface air becomes more dense and leads to a downvalley wind. While this graphic represents data from the Sunport, the wind at the Balloon Fiesta park is similar, though the drainage wind is likely stronger due to the lower elevation and proximity to the Rio Grande. The wind rose on the right depicts the distribution of wind from 1 pm to 5 pm MDT. By afternoon, the drainage wind is gone, having been mixed out. The winds tend to become more southwesterly, and usually have higher speeds than the north drainage wind. Both wind roses illustrate that while winds from the east do not occur frequently, when they do occur the wind speeds are generally strong, often reaching speeds greater than 20 knots.





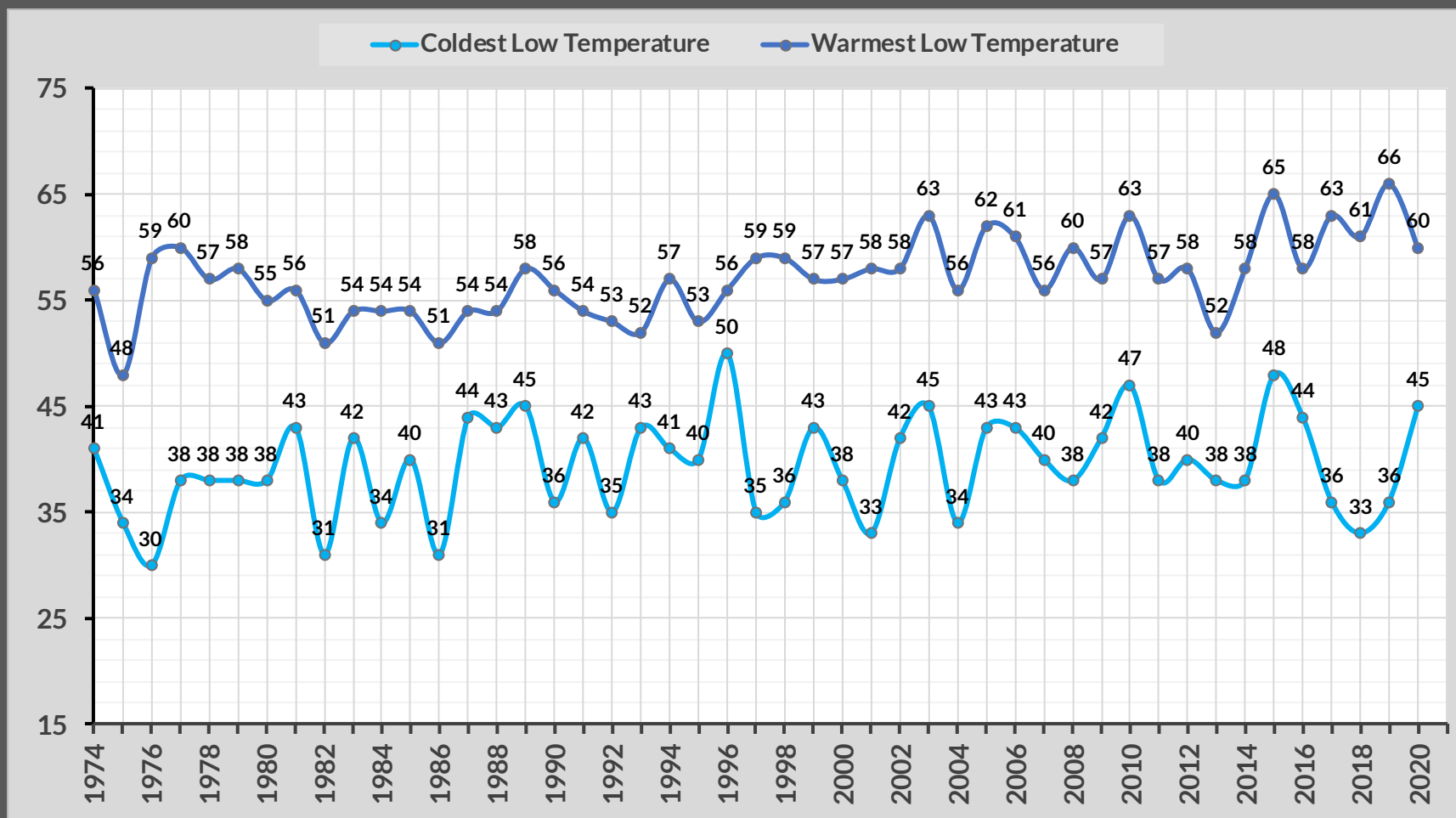
Coldest & Warmest High Temperatures*



*Albuquerque International Sunport October 1-15 1974-2020



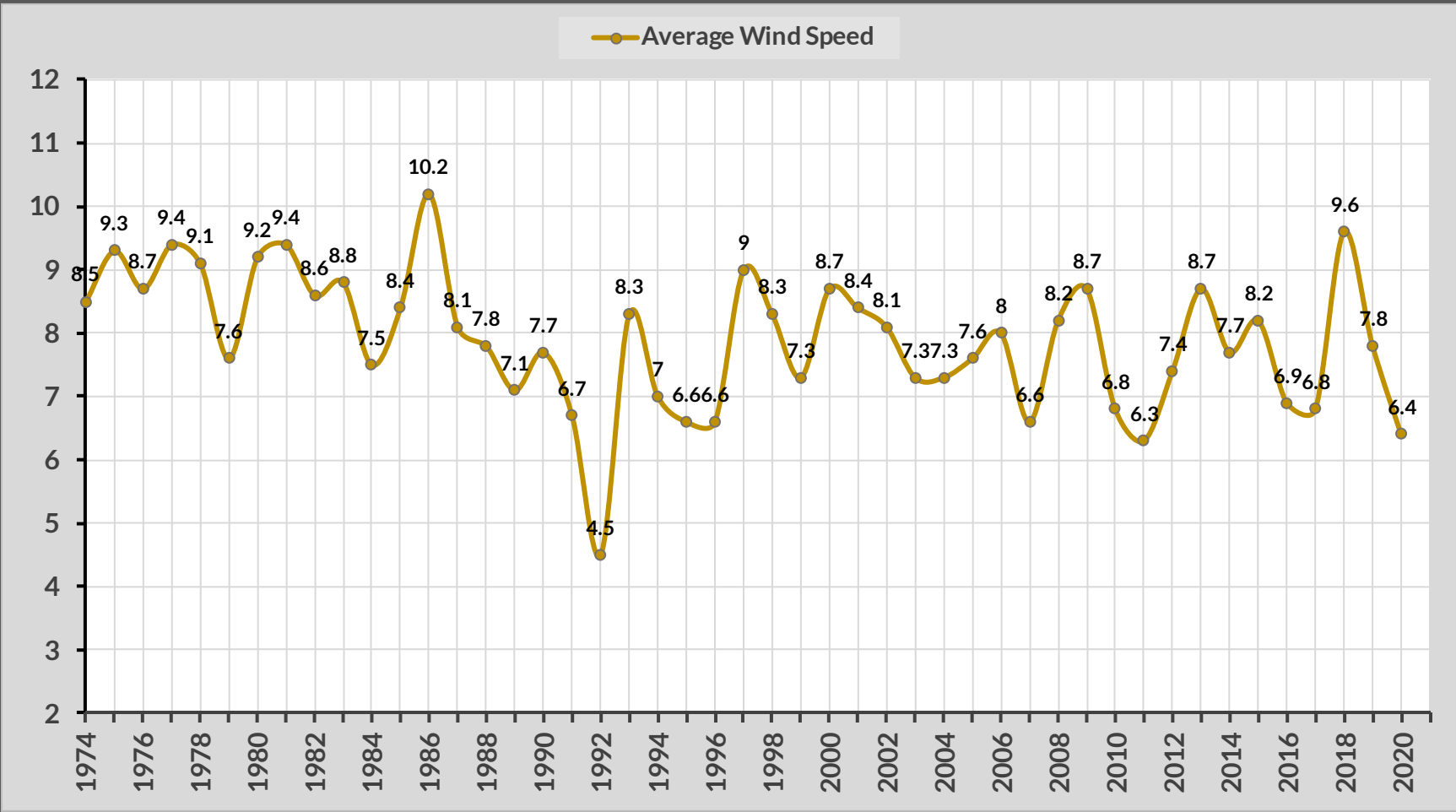
Coldest & Warmest Low Temperatures*



*Albuquerque International Sunport October 1-15 1974-2020



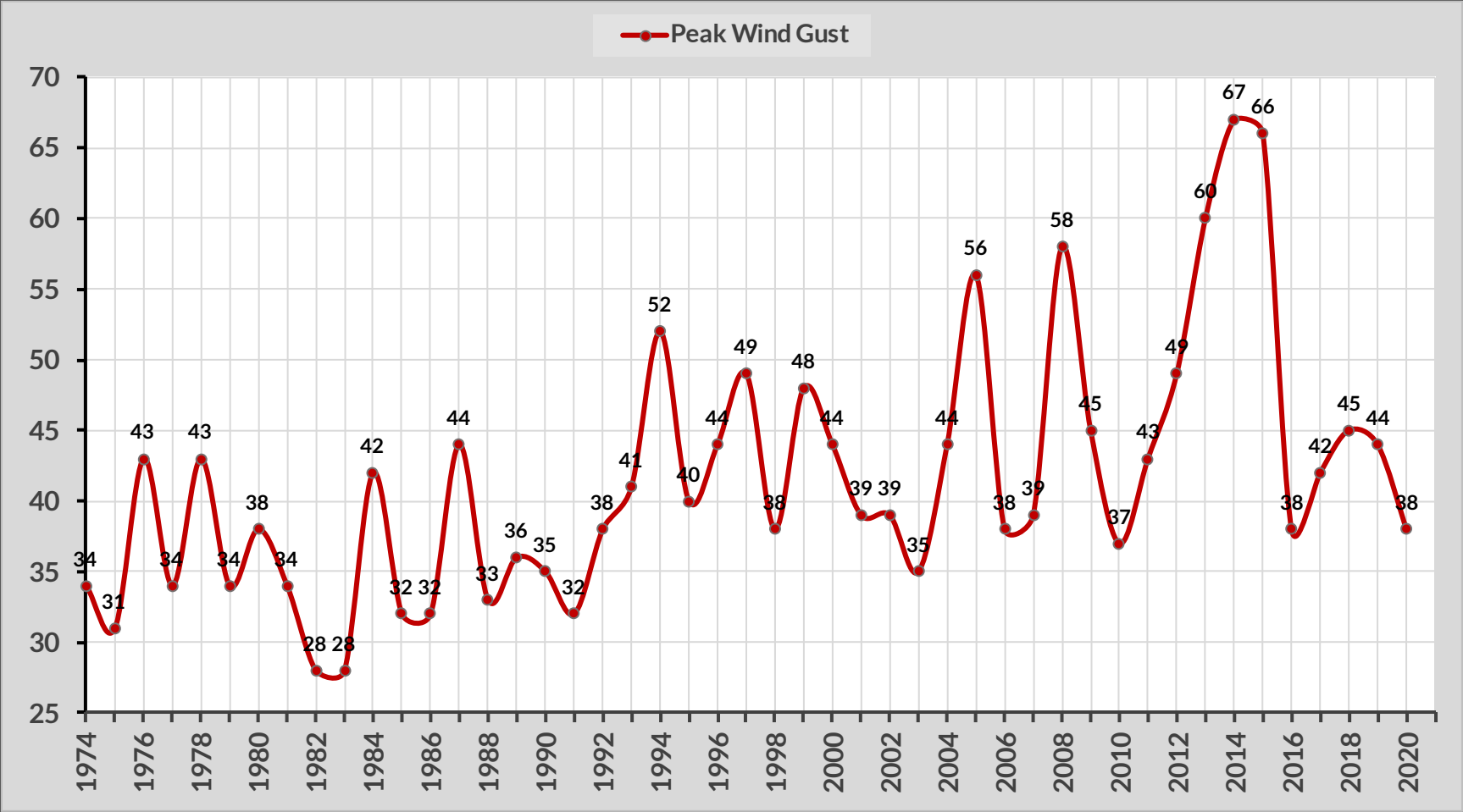
Average Wind Speed*



*Albuquerque International Sunport October 1-15 1974-2020



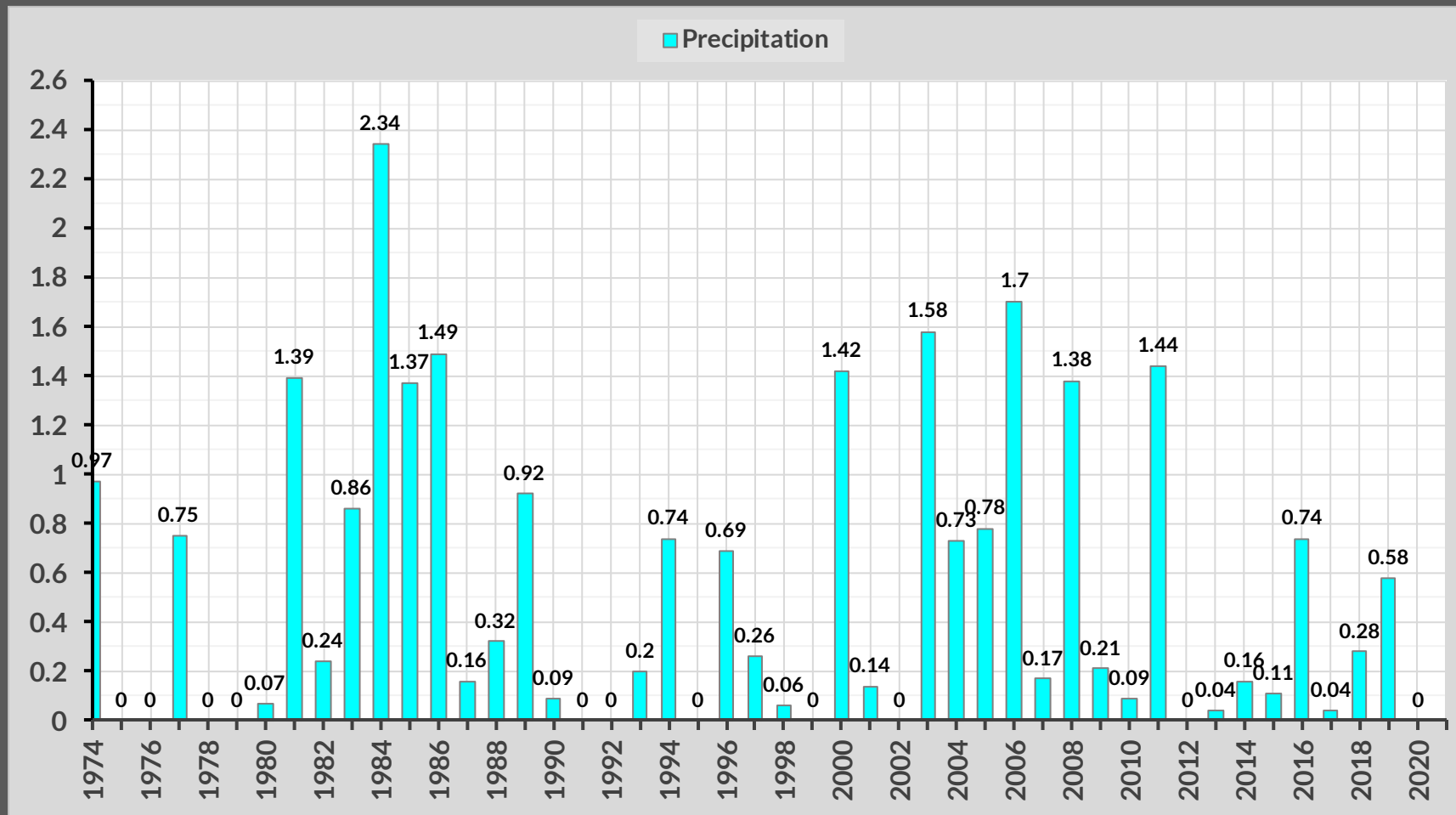
Peak Wind Gusts*



*Albuquerque International Sunport October 1-15 1974-2020



Total Precipitation*



*Albuquerque International Sunport October 1-15 1974-2020